
In This Section

- Drinking Water Supply
- Surface Water Quantity
- Ground Water Quantity

Section 3

Water Quantity

This section addresses water quantity issues (availability and use) in the Coosa basin, whereas water quality is discussed in Section 4. Water use in the Coosa River basin is measured by estimates of freshwater withdrawn from ground and surface water sources. Water availability is assessed based on annual surface water flows and ground water storage. Saline water is not used in the basin. Uses of water include both consumptive uses (in which the water is no longer available to the basin) and nonconsumptive uses (in which the water is returned to the basin after use). About 55 percent of total municipal and industrial (M&I) water withdrawals in 1990 was not returned to surface or ground water sources, primarily due to evaporative losses, and returns to the Chattahoochee River basin.

Surface water is the primary water source in most of the Coosa River basin because surface water supplies are plentiful and ground water yields from crystalline rock aquifers tend to be low. Ground water supplies are important in some areas underlain by carbonate and fractured sandstone aquifers. Water use in the Coosa basin is expected to remain relatively stable in the near future, due to slow projected rates of population growth and a generally unfavorable employment outlook. The total water demand is projected to remain around 205 MGD from 1995 through 2010.

In the following sections, water availability is discussed from a number of viewpoints. First, the important topic of drinking water is presented, which includes both surface and ground water supplies. Then, general surface water availability is presented, followed by ground water availability.

3.1 Drinking Water Supply

3.1.1 Drinking Water Supplies in the Coosa River Basin

The headwaters area of the Coosa River basin provides the second most used raw water source for drinking water in the state of Georgia. The major tributaries of the Coosa River—the Ellijay, Coosawattee, Oostanaula, Conasauga, and Etowah Rivers—serve a significant portion of the population of the north Georgia area including much of north Atlanta metro population in Cobb, Cherokee, and Bartow counties, as well

as the cities of Dalton and Rome. Often larger public water systems that treat surface water sell water to neighboring cities and counties. Many rural cities use ground water pumped from wells or springs as a source of drinking water. Many smaller subdivisions in the north Atlanta and north Georgia mountain areas also use ground water since they are located too far away from a public water system that sells surface water.

The Coosa River basin provides drinking water for about 725,500 people in the state of Georgia through municipal or privately owned public water systems. A public water system pipes water for human consumption and has at least 15 service connections or regularly serves at least 25 individuals 60 or more days out of the year. Public water systems sources include surface water pumped from rivers and creeks or ground water pumped to the surface from wells or naturally flowing from springs. There are three different types of public water systems—community, non-community non-transient, and non-community transient.

Types of Public Water Systems

A community public water system serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents. Examples of community water systems are municipalities, such as cities, counties, and authorities, which serve residential homes and businesses located in the areas. Other types of community public water systems include rural subdivisions or mobile home parks which have a large number of homes connected to a private public water system, usually a small number of wells.

A non-community non-transient public water system serves at least 25 of the same persons over 6 months per year. Examples of non-community non-transient systems are schools, office buildings, and factories that are served by a well or privately owned surface water plant.

A non-community transient public water system does not meet the definition of a non-community non-transient. A non-community transient public water system provides piped water for human consumption to at least 15 service connections or regularly serves at least 25 persons at least 60 days a year. Examples of a non-community transient systems are highway rest stops, restaurants, motels, and golf courses.

Private domestic wells serving individual houses are not covered by the state's public water system regulations. However, the regulations for drilling domestic wells are set by the Water Well Standards Act and the local health department is responsible for ensuring water quality.

In the Coosa River basin there are 34 community public water systems using surface water and serving 644,914 people and 14 community public water systems using ground water and serving 67,986 people (Table 3-1). The locations of surface water intakes within each of the Hydrologic Units of the Coosa River basin are shown in Figures 3-1 through 3-5.

3.1.2 Drinking Water Demands

Drinking water demands are expected to increase due to the explosive growth in the North Atlanta Metro area, especially the subdivision communities in Cobb, Cherokee, Bartow, and Paulding. The North Georgia mountain area is also expected to have increased drinking water demands due to the construction of many retirement and secondary homes. Based on current and forecasted growth, many of the Atlanta Metro counties have adopted water conservation techniques, including ordinances for low flow

Table 3-1. Community Public Water Systems in the Coosa River Basin

Public Water System Name	Water System ID	County	Source
Systems Directly Supplied by Surface Water (arranged by HUC)			
Conasauga River Basin HUC 03150101			
Dalton Utilities	3130000	Whitfield	1. Conasauga River (at plant) 2. Mill Creek 3. Conasauga River 4. Coahulla Creek
City of Chatsworth	2130000	Murray	Holly Creek
Coosawattee River Basin HUC 03150102			
City of Chatsworth	2130000	Murray	Carter's Lake
City of Calhoun	1290000	Gordon	Coosawattee River
City of Ellijay	1230000	Gilmer	1. Ellijay River 2. Cartacay River
Walnut Mtn. Subdivision	2270004	Gilmer	Lake Dawka
Oostanaula River Basin HUC 03150103			
City of Calhoun	1290000	Gordon	Oostanaula River
Berry College	1150003	Floyd	Possum Trot Lake
City of Rome, Water Department	1150002	Floyd	1. Etowah River 2. Oostanaula River
Etowah River Basin HUC 03150104			
Bent Tree Community	2270003	Pickens	1. Lake Tamarack 2. Chestnut Grove Creek
City of Etowah	0850000	Dawson	Etowah River
City of Jasper	2270000	Pickens	Long Swamp Creek
Cherokee County Water and Sewer Authority	0570002	Cherokee	Etowah River
City of Canton	0570001	Cherokee	Etowah River
City of Cartersville	0150002	Cherokee	Lake Allatoona
Cobb Co./Marietta Water Authority	0670002	Cobb	Lake Allatoona
City of Rockmart Water Authority	2330002	Polk	Euharlee Creek
Coosa River below Rome and Chattooga River Basin HUC 03150105			
City of Summerville	0550003	Chattooga	Raccoon Creek
City of Lafayette	2950002	Walker	Duck (Dry) Creek
Systems Supplied by Other Sources (arranged by county)			
Lake Arrowhead Subdivision	0570006	Cherokee	Groundwater
Little River Mobile Home Park	0570007	Cherokee	Groundwater
Oakland Trailer Park	0570015	Cherokee	Groundwater
Page's Mobile Home Park	0570057	Cherokee	Groundwater
Red Barn Mobile Home Park	0570025	Cherokee	Purchased Surface Water
Rock Creek Estates	0570023	Cherokee	Purchased Surface Water
Sunset Estates	0570073	Cherokee	Groundwater
Waleska	0570024	Cherokee	Purchased Surface Water

Public Water System Name	Water System ID	County	Source
Woodstock	0570003	Cherokee	Purchased Surface Water
Austell	0670001	Cobb	Purchased Surface Water
Cobb County	0670003	Cobb	Purchased Surface Water
Fairway Villas	0670009	Cobb	Groundwater
Kennesaw	0670004	Cobb	Purchased Surface Water
Marietta	0670005	Cobb	Purchased Surface Water
Powder Springs	0670006	Cobb	Groundwater
Smyrna	0670007	Cobb	Purchased Surface Water
Athens Boat Club	0850012	Dawson	Groundwater
Dawsonville	0850000	Dawson	Purchased Surface Water
Cave Spring	1150000	Floyd	Groundwater
Floyd County	1150001	Floyd	Purchased Surface Water
Eagle Mountain Resort	1230045	Gilmer	Purchased Surface Water
Lakeside Mobile Home Park	1230051	Gilmer	Groundwater
Talking Rock Creek Properties	1290021	Gordon	Purchased Surface Water
Etowah Ridge Duplexes	1870056	Lumpkin	Groundwater
Hidden Lake Academy	1870054	Lumpkin	Groundwater
Fort Mountain Estates	2130010	Murray	Groundwater
Dallas	2230000	Paulding	Purchased Surface Water
Paulding County Water Auth.	2230002	Paulding	Purchased Surface Water
Polk County Water Authority	2330001	Polk	Groundwater Under the Influence of Surface Water

household plumbing in new construction, limits on outside watering during the summer months, increased water rates to curb excess use, and public education. In 1990, Georgia became one of the first states to adopt ultra-low flow standards for plumbing fixtures. Under this law, local governments were required to adopt ultra-low flow standards (1.6 gpf toilets, 2.5 gpm showerheads, 1.0 gpf urinals, etc.) in order to remain eligible to receive any state water or wastewater grant or loan. These requirements were implemented in 1991 and 1992 and apply to new residential and commercial construction and renovations that include replacement of plumbing fixtures. Projections of drinking water demands are discussed in Section 3.2 and 3.3.

3.1.3 Drinking Water Permitting

The Georgia Safe Drinking Water Act of 1977 and the Rules for Safe Drinking Water (391-3-5) adopted under the act require any person who owns and/or operates a public water system to obtain a permit to operate a public water system from the Environmental Protection Division. The permitting process has three phases—Inquiry and Discovery, Technical Review, and Permitting. During these phases the owner must provide detailed description of the project; demonstrate the reliability of the water source; render engineering plans and specifications prepared by a professional engineer demonstrating the construction integrity of wells, treatment, and distribution systems; conduct preliminary water sample testing; and submit legal documentation including an

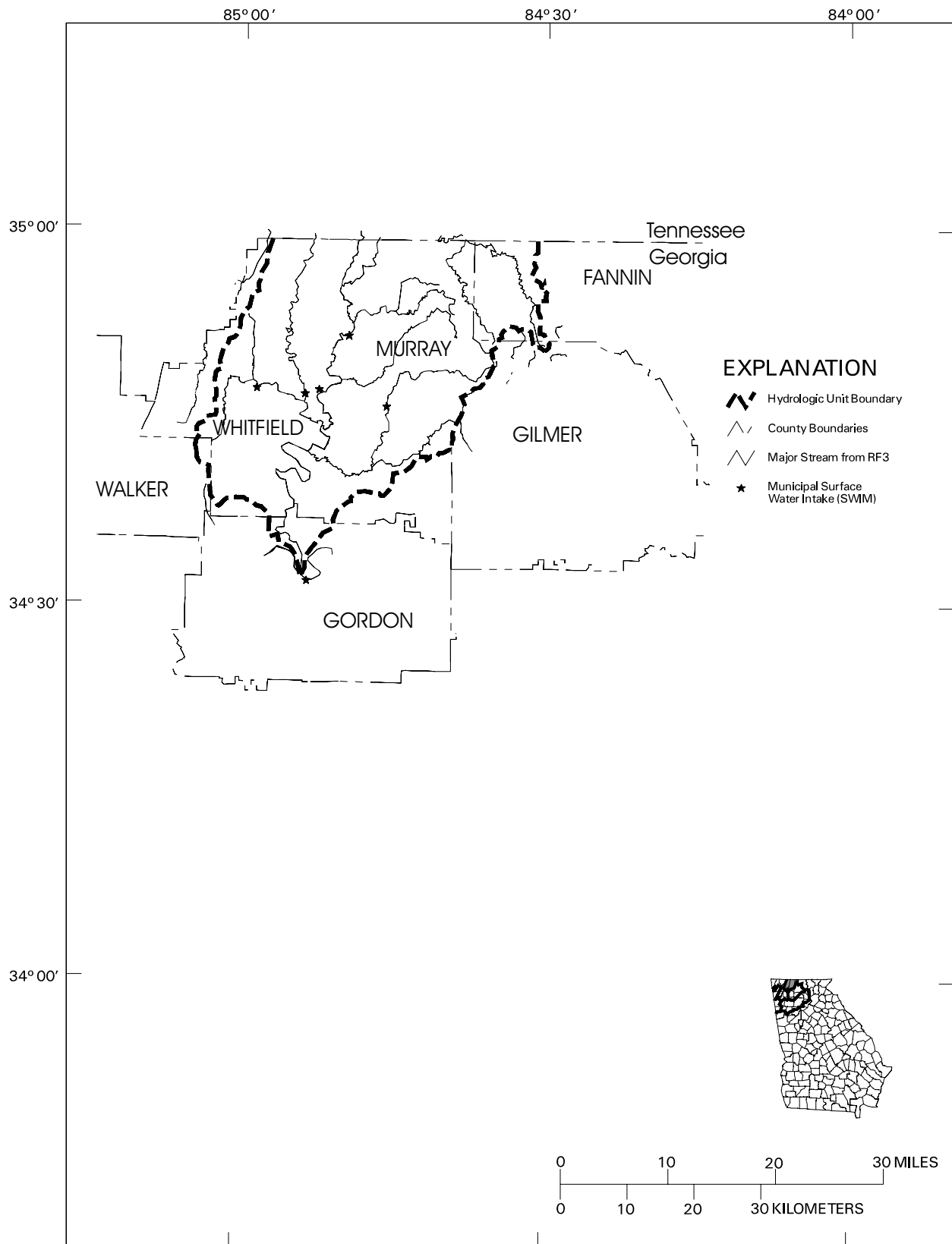


Figure 3-I. Surface Water Intakes, Coosa River Basin, HUC 03150101

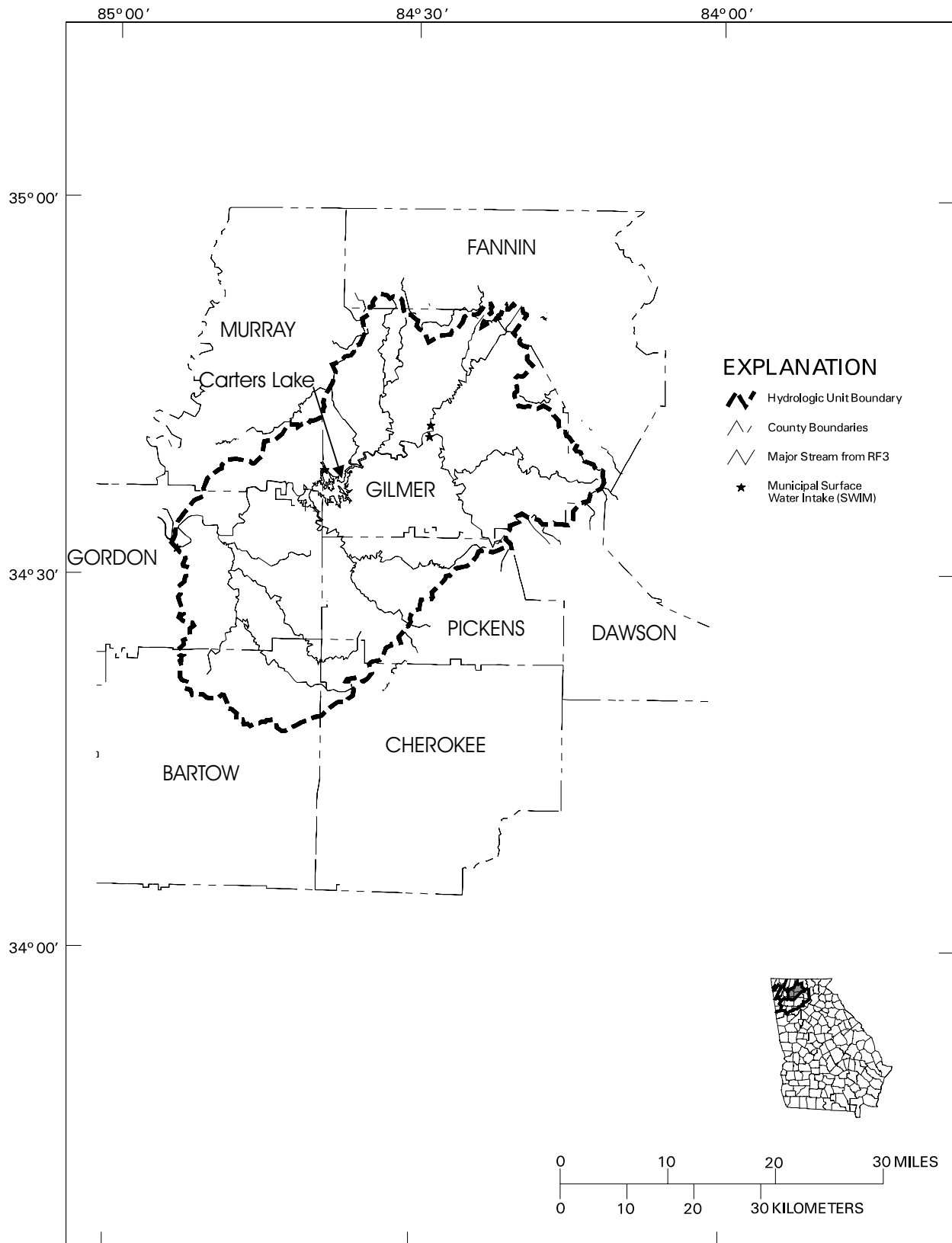


Figure 3-2. Surface Water Intakes, Coosa River Basin, HUC 03150102

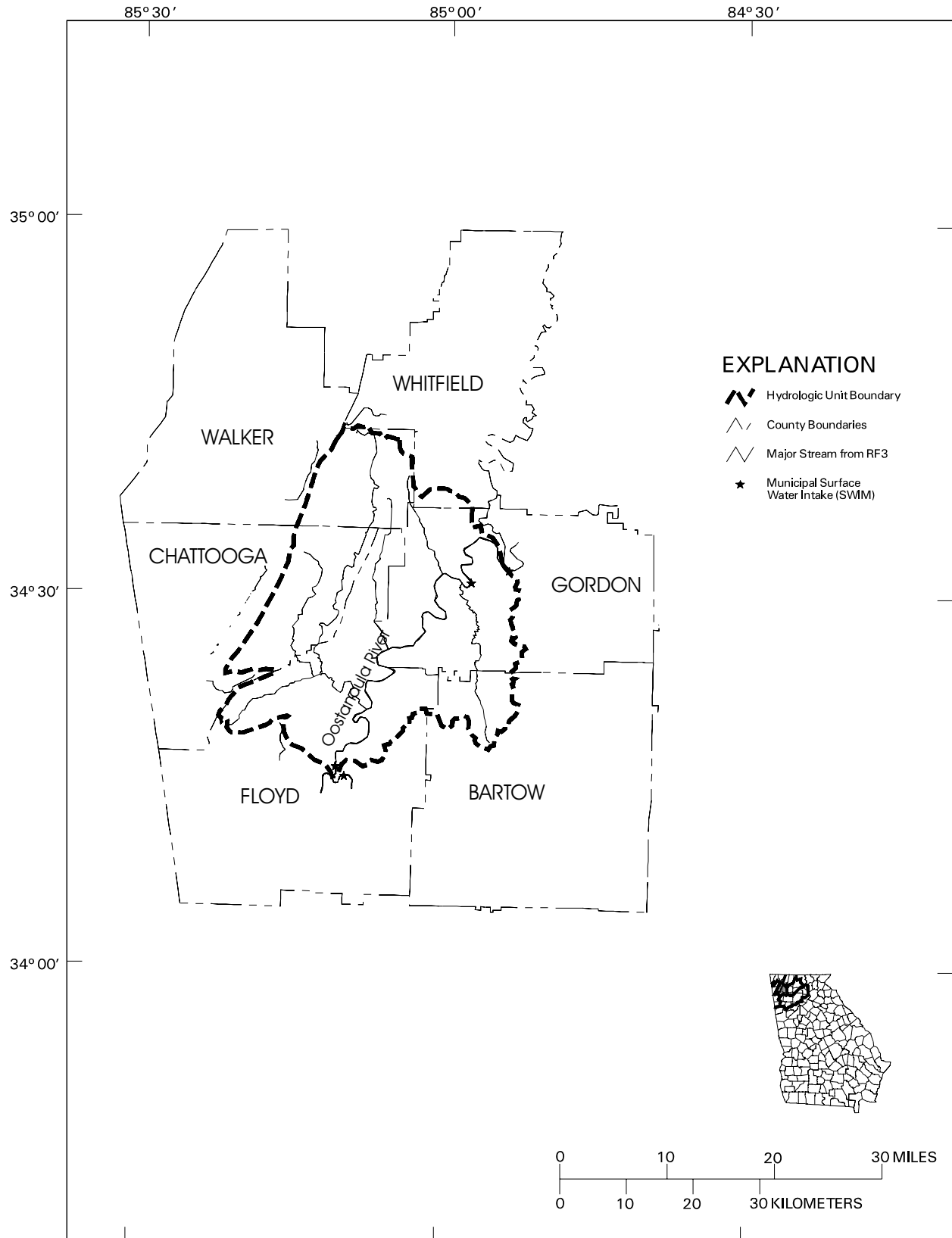


Figure 3-3. Surface Water Intakes, Coosa River Basin, HUC 03150103

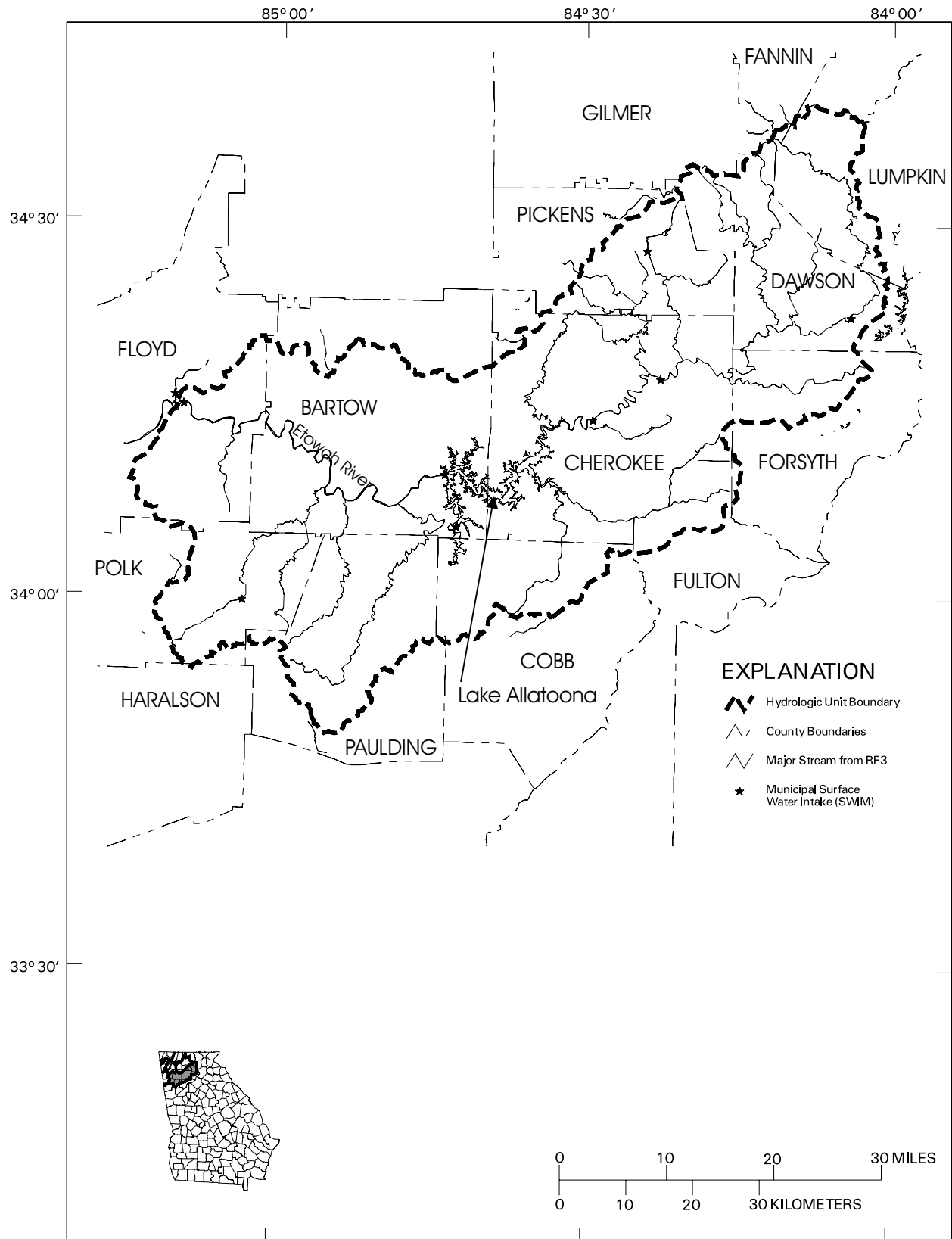


Figure 3-4. Surface Water Intakes, Coosa River Basin, HUC 03150104

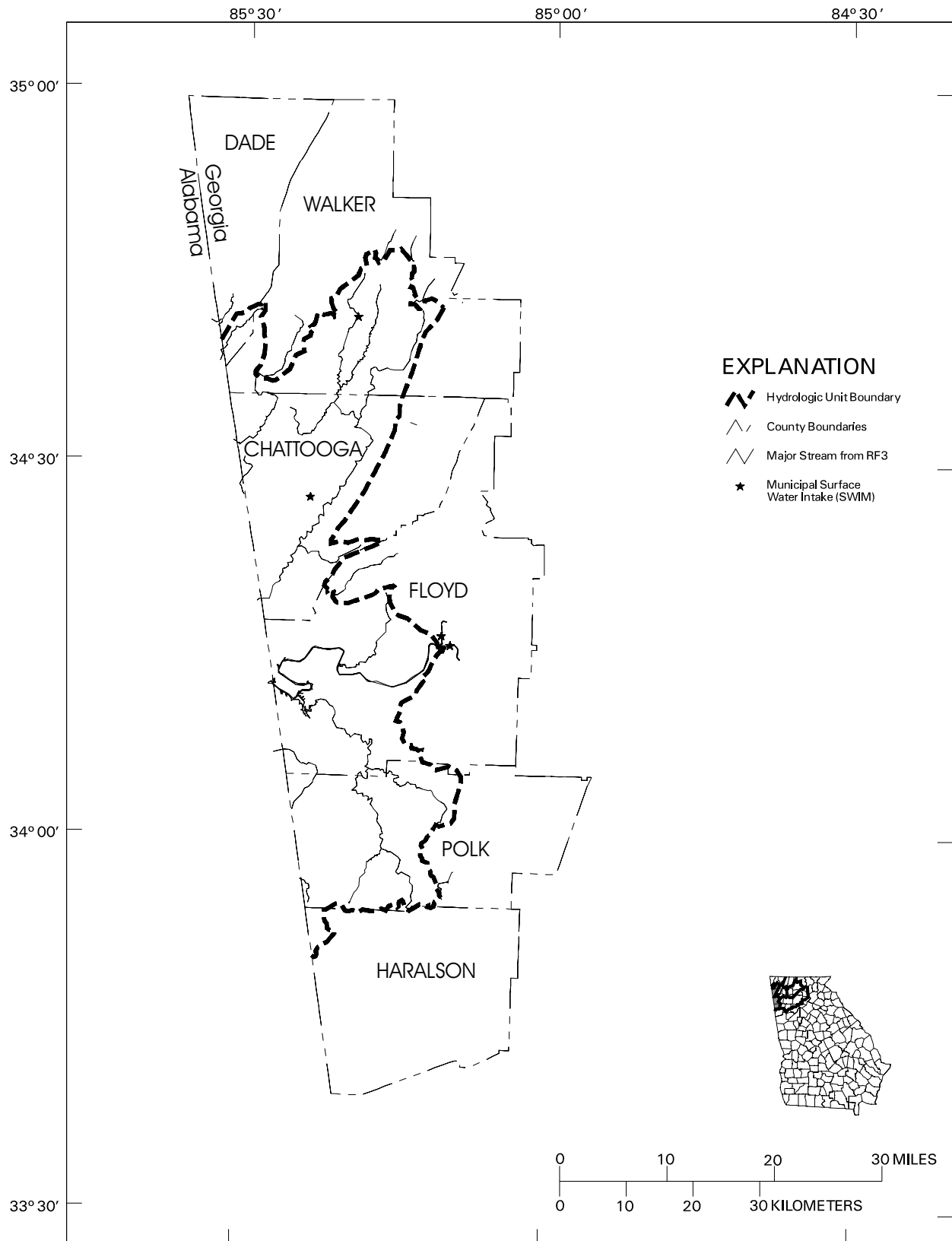


Figure 3-5. Surface Water Intakes, Coosa River Basin, HUC 03150105

application to operate a public water system. Permits contain specific conditions the owner must meet for different types of public water systems, including a list of approved water sources, filter rates, disinfection and treatment requirements, operator certification, documentation and reporting requirements, compliance with water sample testing schedule, and number of allowed service connections. Permits are issued for 10 years and are renewable. As of this writing, there are 135 active and permitted systems in the Coosa River basin.

3.2 Surface Water Quantity

3.2.1 Surface Water Supply Sources

Surface water supplies in the Coosa basin include water in rivers, ponds, and reservoirs, including two major impoundments on the Coosawattee and Etowah Rivers (see Section 2.1.4). The total mean annual flow in the Coosa River at the Alabama state line is approximately 8,000 MGD. Reservoirs provide a storage capacity within the basin of approximately 1.4×10^6 million acre-feet.

3.2.2 Surface Water Supply Demands and Uses

Municipal and Industrial Demand

Municipal and industrial (M&I) water demands include publicly supplied and privately supplied residential, commercial, governmental, institutional, industrial, manufacturing, and other demands such as distribution system water losses. Total M&I water demand from the Georgia part of the Coosa basin (exclusive of power generation cooling water) is expected to increase from 183 million gallons per day (MGD) in 1995 to 274 MGD in 2020 and to 383 MGD in 2050 with passive conservation programs in place. These passive conservation measures include increases in water use efficiency resulting from recently implemented plumbing codes, the natural replacement of water fixtures, and known increases in water and wastewater prices since 1990.

Existing M&I permits for municipal and industrial (nonagricultural) surface water withdrawals in the Coosa River basin are shown in Table 3-2 (including permits for power generation cooling water). In 1990, the residential sector of the basin used about 28 percent of the M&I water, compared to 55 percent for the manufacturing sector.

Much of the M&I demand is not consumed, but is instead returned to the Coosa River basin as treated waste water.

Agricultural Water Demand

In 1995 approximately 124,700 acres in the Georgia portion of the Coosa River basin were devoted to the production of crops, orchards, turf, nursery, and aquaculture. 5,600 of these acres were irrigated. The number of irrigated acres in the Coosa basin is expected to increase to 6,700 by year 2000.

When averaged over a year, the 1995 agricultural water demand for counties in the Georgia part of the Coosa River basin was 18.6 MGD (see Table 3-3). The agricultural water demand in the basin is expected to increase to 20.0 MGD in 2000 and to 22.9 MGD in 2010 (NRCS, 1996).

In the Coosa River basin most agricultural water is used for livestock and poultry operations and is supplied from surface water. Unlike municipal, industrial, and cooling water withdrawals, practically none of the water withdrawn for agricultural use is returned to streams.

Table 3-2. Permits for Surface Water Withdrawals in the Coosa River Basin

Facility Name	Source	24 Hour Maximum (MGD)	Monthly Average (MGD)	County
Adairsville, City of	Lewis Spring	5.10	4.10	Bartow
Baroid Drilling Fluids, Inc.	Etowah River	3.40	2.50	Bartow
Bartow County Water System	Bolivar Springs	0.51	0.43	Bartow
Bent Tree Community, Inc.	Lake Tamarack	0.25	0.23	Pickens
Bent Tree Corporation	Chestnut Cove Creek	0.25	0.23	Pickens
Berry Schools, The	Possum Trot Reservoir	1.00	0.70	Floyd
Big Canoe Utilities Company	Pettit Lake	1.00	1.00	Pickens
Big River Industries, Inc. (Revoked)	Simpson Creek	0.87	0.58	Polk
Birmingham Southeast, L.L.C.	Pettit Creek	1.00	0.60	Bartow
Calhoun, City of	City of Calhoun Spring	0.64	0.54	Gordon
Calhoun, City of	Oostanaula River	13.20	9.00	Gordon
Calhoun, City of - Coosawattee	Coosawattee River	18.00	16.00	Gordon
Canton, City of	Etowah River	5.45	5.45	Cherokee
Cartersville, City Of, Water Department	Etowah River	26.42	23.00	Bartow
Cartersville, City Of, Water Department	Lake Allatoona	21.42	18.00	Bartow
Cave Spring, City of	Cave Spring	1.50	1.30	Floyd
Cedartown, City of	Big Spring	3.00	2.60	Polk
Chatsworth Water Works Comm-eton	Eton Springs	1.80	1.80	Murray
Chatsworth Water Works Comm-holly	Holly Creek	1.10	1.00	Murray
Chatsworth, City of	Carters Lake	2.55	2.30	Murray
Chatsworth, City of	Coosawattee River	2.20	2.00	Murray
Cherokee County Water & Sewerage Auth	Etowah River	6.50	5.40	Cherokee
Cobb Co - Marietta Water Auth	Lake Allatoona	86.00	78.00	Cobb
Dalton Utilities - Coahulla Cr	Coahulla Creek	6.00	5.00	Whitfield
Dalton Utilities - Conasauga R	Conasauga River	49.40	40.30	Whitfield
Dalton Utilities - Freeman Springs	Freeman Springs	2.00	1.50	Whitfield
Dalton Utilities - Mill Cr	Mill Creek	13.20	7.50	Whitfield
Dalton Utilities - River Road	Conasauga River	35.00	18.00	Whitfield
Ellijay, City of - Ellijay R	Ellijay River	0.55	0.45	Gilmer
Ellijay-gilmer Co W & S Auth	Cartecay River	4.00	4.00	Gilmer
Emerson, City of	Moss Springs	0.63	0.50	Bartow
Etowah Water & Sewer Auth	Etowah River	1.50	1.50	Dawson
Floyd County	Old Mill Spring	4.00	3.50	Floyd
Galey & Lord, Inc.- Brighton Plant	Woodward Creek	0.80	0.70	Floyd

Facility Name	Source	24 Hour Maximum (MGD)	Monthly Average (MGD)	County
Georgia Power Co - Bowen	Etowah River	520.00	85.00	Bartow
Georgia Power Co - Plant Hammond	Coosa River	655.00	655.00	Floyd
Gold Kist, Inc	Etowah River	3.00	2.50	Cherokee
Inland-rome Inc.	Coosa River	32.00	30.00	Floyd
Jasper, City of	Long Swamp Creek	1.00	1.00	Pickens
Jefferson Smurfit Corporation	Big Spring Branch	0.18	0.07	Polk
La Fayette, City of - Dry Cr	Dry Creek	1.00	0.90	Walker
La Fayette, City Of- Big	Big Spring	1.65	1.31	Walker
Lindale Manufacturing, Inc	Silver Creek	6.52	6.52	Floyd
Mohawk Carpet Corporation	Chattooga R./Raccoon Cr.	3.20	2.80	Chattooga
Mount Vernon Mills Riegel Apparel Div	Trion Spring	9.90	6.60	Chattooga
New Riverside Ochre Company, Inc.	Etowah River	4.00	4.00	Bartow
New Riverside Ochre Company, Inc.	Etowah River	3.00	3.00	Bartow
O. Wayne Rollins	Pettit Creek	1.50	1.30	Bartow
Oglethorpe Power Corp.	Heath Creek			Floyd
Polk County Water Authority	Aragon, Morgan, Mulcos	1.60	1.10	Polk
Polk County Water Authority	Deaton Spring	2.00	2.00	Polk
Rockmart, City of	Euharlee Creek	2.00	1.50	Polk
Rome, City of	Oostanaula & Etowah River	16.50	15.00	Floyd
Summerville, City of	Lowe Spring	0.77	0.70	Chattooga
Summerville, City of	Raccoon Creek	3.00	2.50	Chattooga

Note: Permits are not required for withdrawals of less than 100,000 gallons per day as a monthly average.

Table 3-3. Agricultural Water Demand for the Coosa River Basin (Georgia Portion)

Year	Total Water Demand (MGD)
1995	18.6
2000	20.0
2010	22.9
2020	23.9
2050	27.6

Note: Demand in MGD, including crops/orchards, turf, nursery, livestock/poultry, and aquaculture demand, from NRCS, 1996, based on Medium Demand projections without water conservation.

Power Generation Water Demand

There are three power-generating plants located within the Coosa River basin that use the water resources of the basin (Figure 2-9). These include the Corps of Engineers hydroelectric facilities at Lake Allatoona on the Etowah River and at Carters Lake on the Coosawattee River. Georgia Power operates a fossil fuel plant (Plant Bowen) on the

Etowah River downstream of Allatoona. Instream water use by the two hydroelectric plants constitutes nearly the entire flow within the rivers, except during flood conditions, but is nonconsumptive. Water for thermoelectric-power generation is considered an off-stream use of water, and generally is moderately consumptive to nonconsumptive. Power generated at Plant Bowen had a consumptive demand of 32 MGD in 1990. Plant Bowen's water demand is projected to be 41 MGD in 2010.

Navigational Water Demand

The Coosa River channel within Georgia is not currently used for commercial navigation purposes. The channel was authorized for navigation to Rome, Georgia in the Rivers and Harbors Act of 1945; however, the benefit/cost ratio of extending the channel was insufficient to justify investment at the federal level (USACE, 1996).

Recreation

Because of proximity to the largest metropolitan area in the southeast, portions of the Coosa River basin and its reservoirs and tributaries are heavily used for recreation. The upper part of the Coosa River basin contains two heavily used reservoirs, national forests, and state parks. For example, Lake Allatoona, located northwest of Atlanta had nearly 500,000 boat trips in 1995, and one of the highest visitation rates among U.S. Army Corps of Engineers' reservoirs in the southeast.

The headwaters of the Coosa River rise in the scenic mountains of northwest Georgia. The Coosa River basin contains parts of the Chattahoochee National Forest, several state parks, and resort communities which are favorite weekend and vacation destinations. The Cohutta Wilderness provides hiking and trout fishing recreation in Fannin county, and rivers such as the Cartecay, Etowah, Coosawattee, and Talking Rock Creek provide quality canoeing experiences.

Recreational fisheries of the Coosa River basin include a cold-water trout fishery in the mountains above Lake Allatoona and Carters Lake. Warm-water recreational fisheries exist in the remainder of the Coosa River basin for various species of bass, catfish, and sunfish. Recreational fishing activities in Lake Allatoona and Carters Lake support businesses and services, including bait and tackle shops, guide services, hotels, and restaurants.

Fish and Wildlife Water Demand

Two fish and wildlife management facilities are located in the Georgia portion of the Coosa basin: Arrowhead Public Fishing Area and Summerville Fish Hatchery (Ziewitz et al., 1996). Arrowhead Game Management and Public Fishing Area obtains water from Lovejoy Creek, a tributary of the Armuchee River. Monthly average water needs range from 0.074 MGD in January to 0.438 MGD in March and April, with an annual average of 0.35 MGD. WRD operates Summerville Fish Hatchery, which obtains its supply from ground water (springs). Monthly average water needs range from 1.34 MGD in October to 3.51 MGD in March, with an annual average of 2.19 MGD.

Waste Assimilation Water Demand

Water quantity, wastewater treatment, and wastewater discharge permitting are addressed in Section 4. However, it should be noted that the guidelines for discharge of treated effluent into the rivers and streams of the Coosa River basin assume that sufficient surface water flow will be available to assimilate waste and ensure that water quality criteria will be met.

Environmental Water Demands

EPD recognizes the importance of maintaining suitable aquatic habitat in Georgia's lakes and streams to support viable communities of fish and other aquatic organisms. Portions of the mainstem of the Coosa River have been altered by human activities, both physically and with regard to flows. From a water quantity perspective, aquatic habitat is adversely affected in some locations by unnatural extreme variations in lake levels and river flow, especially below Carters Lake and Lake Allatoona. One significant issue which is receiving increasing attention from EPD is that of the minimum stream flow rate which must be maintained below a reservoir. A current state requirement is to maintain the 7Q10 flow (7-day average low flow with a once in ten years recurrence interval), when water is available upstream. Consideration is being given to an increase in this minimum flow requirement under recommendations of the Wildlife Resources Division (Evans and England, 1995).

3.2.3 Surface Water Withdrawal Permitting

The 1977 Surface Water Amendments to the Georgia Water Quality Control Act of 1964 require all nonagricultural users of more than 100,000 GPD on a monthly average (from any Georgia surface water body) to obtain a permit from EPD for this withdrawal. These users include municipalities, industries, military installations, and all other nonagricultural users. The statute stipulates that all pre-1977 users who could establish the quantity of their use prior to 1977 would be "grandfathered" for that amount of withdrawal. Table 3-2 lists the permits in effect in the Coosa River basin.

Applicants are required to submit details relating to the source of withdrawals, demand projections, water conservation measures, low flow protection measures (for nongrandfathered withdrawals), and raw water storage capacities. An EPD-issued permit identifies the source of withdrawal, the monthly average and maximum 24-hour withdrawal, the standard and special conditions under which the permit is valid, and the expiration date of the permit. The standard conditions section of the permit generally defines the reporting requirements (usually annual submission of monthly average withdrawals); the special conditions section of the permit usually specifies measures the permittee is required to undertake so as to protect downstream users and instream uses (e.g. waste assimilation, aquatic habitat). The objective of these permits is to manage and allocate water resources in a manner that both efficiently and equitably meets the needs of all the users.

Farm Irrigation Permits

The 1988 Amendments to the Water Quality Control Act establish the permitting authority within EPD to issue farm irrigation water use permits. As with the previously mentioned surface water permitting statute, the lower threshold is 100,000 GPD; however users of less water may apply for and be granted a permit. With two exceptions, farm use is defined as irrigation of any land used for general farming, aquaculture, pasture, turf production, orchards, nurseries, watering for farm animals and poultry, and related farm activities. One relevant exception is that the processing of perishable agricultural products is not considered a farm use.

Applicants for these permits who can establish that their use existed prior to July 1, 1988, and when these applications are received prior to July 1, 1991, are "grandfathered" for the operating capacity in place prior to July 1, 1988. Other applications are reviewed and granted with an eye towards protection of grandfathered users and the integrity of the resource. Generally, agricultural users are not required to submit any water use reports.

3.2.4 Flooding and Floodplain Management

Sometimes the issue is not the lack of water, but too much water. Floods, as well as droughts, can be very damaging natural hazards. Almost all of Georgia is susceptible to the threat of floods. The Georgia Emergency Management Agency (GEMA) ranks floods as the number one natural hazard in Georgia. Over the past nineteen years, 57 Georgians have lost their lives due to flooding. The Flood of 1994 (Tropical Storm Alberto) is considered the worst flooding event in Georgia since 1841, which is the beginning of the State's recorded flood history. Much of the flooding in 1994 resulted from the overflowing of the Flint River and the Ocmulgee River and, to a much lesser extent, the Coosa River.

Development within the floodplains of these rivers is also a concern, especially when a community has no means of regulating the development. Development within floodplain areas can increase flood levels, thereby increasing the number of people and the amount of property at risk. Although the term "floodplain management" is often used as a synonym for program or agency-specific projects and regulations, it is in fact quite a broad concept. It is a continuous process of making decisions about whether floodplains are to be used for development and how they are to be developed. It encompasses the choices made by owners of floodplain homes and businesses, developers, and officials at all levels of government.

3.3 Ground Water Quantity

3.3.1 Ground Water Sources

As part of the Alabama-Coosa-Tallapoosa and Apalachicola-Coosa-Flint (ACT/ACF) Comprehensive Basin Study, scientists at USGS completed studies of ground water resources in each of eight geographic subareas of the ACT/ACF basins. The Coosa River basin is coincident with subarea 6 of this study (Robinson et al., 1996).

Ground water in Subarea 6 is drawn from three types of aquifers: solution-conduit aquifers in carbonate rocks such as limestone, fracture-conduit aquifers in sandstone, and fracture-conduit aquifers in crystalline rock. Only the first two aquifer types generally provide sufficient reliable yield for municipal and industrial use. Robinson et al. (1996) provide an analysis of the current ground-water use and general development potential within the Georgia portion of the Coosa basin. They estimated that 1990 ground water use was 1.1 percent of mean annual baseflow, 4.3 percent of average drought baseflow, and 4.7 percent of minimum drought baseflow, based on observations during the 1954 drought. In general, ground-water resources are underused throughout the basin. The rural population relies on ground water as the principal source of water supply, while more densely populated areas rely on surface water resources. However, wells supplied water to many communities prior to the development of large surface water reservoirs. In recent years, suburban communities have developed ground water supplies in response to curtailed surface water supplies.

Flows withdrawn from ground water within the basin generally represents an equal reduction in the ground water discharge to streams. While a large portion of the ground-water baseflow within the basin is untapped, use of this supply must be balanced by the need to maintain minimum flows in stream for the support of aquatic life and to provide assimilative capacity for waste discharges.

3.3.2 Ground Water Supply Demands

Municipal and Industrial Uses

Ninety-seven percent of the Coosa basin M&I water demand in 2005 is projected to be supplied by surface water withdrawals. The ground water withdrawals for M&I use are projected to be only 7 MGD in the Coosa basin. Ground water pumpage is expected to intercept some water that would have surfaced in the streams, and this amount can be viewed as ground water demand that is effectively supplied by surface water. This effect depends on the geology of the basin.

Agricultural Water Demand

Total agricultural water demand for the Coosa River basin is discussed above in Section 3.2.2, and is derived from both surface and ground water sources. In the Piedmont portion of the Coosa basin most agricultural water is used for livestock and poultry, and is supplied from surface water.

3.3.3 Ground Water Supply Permitting

Nonagricultural Permits

The Georgia Ground Water Use Act of 1972 requires permits from EPD for all nonagricultural users of ground water of more than 100,000 GPD. General information required of the applicant includes location (latitude and longitude); past, present, and expected water demand; expected unreasonable adverse effects on other users; the aquifer system from which the water is to be withdrawn; and well construction data. The permits issued by EPD stipulate both the allowable monthly average and annual average withdrawal rates, standard and special conditions under which the permit is valid, and the expiration date of the permit. Ground water use reports are generally required of the applicant on a semi-annual basis. The objective here is the same as with surface water permits. A list of active Georgia municipal and industrial ground water withdrawal permits is provided in Table 3-4.

Farm Irrigation Permits

The 1988 Amendments to the Ground Water Use Act establishes the permitting authority within EPD to issue farm irrigation water use permits. As with the previously mentioned ground water permitting statute, the lower threshold is 100,000 GPD; however users of less water may apply and be granted a permit. With two exceptions, farm use is defined as irrigation of any land used for general farming, aquaculture, pasture, turf production, orchards, nurseries, watering for farm animals and poultry, and related farm activities. One exception relevant to the Coosa River basin is that the processing of perishable agricultural products is considered a farm use. Agricultural withdrawal permits are too numerous to list in this document.

Applicants for these permits who can establish that their use existed prior to July 1, 1988, and when their applications are received prior to July 1, 1991, are “grandfathered” for the operating capacity in place prior to July 1, 1988. Other applications are reviewed and granted with an eye towards protection of grandfathered users and the integrity of the resource. Generally, agricultural users are not required to submit any water use reports.

Table 3-4. Active Municipal and Industrial Ground Water Withdrawal Permits in the Coosa River Basin

County	Permit #	Type	Permit User	Monthly Permitted Flow (MGD)	Yearly Permitted Flow (MGD)	Aquifer
Bartow	008-0001	Industrial	New Riverside Ocher Company, Inc.	0.108	0.108	Shady FM Wiesner FM
Bartow	008-0010	Industrial	Anheuser-Busch, Inc.	0.220	0.146	Paleozoic LS
Bartow	008-0008	Municipal	City of White	0.200	0.150	Paleozoic LS
Bartow	008-0007	Industrial	Riverside Products	0.240	0.200	Knox Group
Bartow	008-0006	Industrial	First Brands Corp.	0.720	0.450	Shady FM
Bartow	008-0002	Industrial	Goodyear Tire & Rubber Corp.	0.300	0.200	Conasauga FM
Bartow	008-0003	Industrial	Chemical Products Corporation	1.700	1.700	Shady FM
Bartow	008-0005	Industrial	Chemical Products Corporation	1.600	1.600	Shady FM
Chattooga	027-0001	Municipal	Chattooga Co. Water District #1	0.700	0.650	Paleozoic LS
Chattooga	027-0002	Municipal	Town of Lyerly	0.150	0.120	Conasauga FM Knox Group
Cherokee	028-0002	Industrial	Seaboard Farms	0.210	0.210	Crystalline Rock
Cherokee	028-0001	Municipal	City of Ball Ground	0.150	0.150	Crystalline Rock
Floyd	057-0001	Municipal	Floyd County	1.300	1.037	Knox Group
Gordon	064-0001	Industrial	Carriage Industries	0.500	0.500	Paleozoic LS
Gordon	064-0002	Municipal	City of Calhoun	2.600	2.600	Paleozoic LS
Gordon	064-0003	Industrial	Vulcan Materials Co.	2.500	2.500	Paleozoic LS
Gordon	064-0003	Industrial	Multifex Corporation	0.665	0.665	Conasauga FM
Murray	105-0001	Municipal	City of Chatsworth	1.440	1.440	Conasauga FM Knox Group
Pickens	112-0003	Municipal	Pickens Co. Water Authority	0.160	0.160	Crystalline Rock
Pickens	112-0001	Municipal	Big Canoe Corporation	0.300	0.300	Crystalline Rock
Pickens	112-0002	Municipal	City of Jasper	0.470	0.470	Crystalline Rock
Polk	115-0004	Municipal	City of Rockmart	1.500	1.500	Newala LS
Polk	115-0001	Municipal	Polk Co. Water Authority	1.000	1.000	Knox Group
Polk	115-0002	Industrial	Engineered Fabrics Corp.	0.170	0.150	Knox Group Newala LS
Polk	115-0003	Industrial	GEO Specialty Chemicals	2.500	2.500	Paleozoic LS
Walker	146-0010	Municipal	City of Lafayette	1.100	1.000	Knox Group
Walker	146-0009	Municipal	City of Lafayette	0.850	0.750	Paleozoic LS
Walker	146-0005	Municipal	Walker Co. Rural W&S Authority	0.200	0.200	Newala LS

Excessive Ground Water Withdrawals

Excessive ground water withdrawal can lead to lowering or drawdown of the water table. Localized groundwater drawdowns are generally discovered only after the fact of permitting has occurred and withdrawal operations begun. To avoid such a possibility, if an application for a very large use of ground water is received, the Water Resources Management Program of the Georgia EPD can take certain steps to possibly contain

drawdowns effects. Modeling the hydrogeologic impact of such a large user may be required of the potential permittee. If this computer analysis indicates no unreasonable impact on existing users, such a water use permit may be approved. Another recommended possibility is a negotiated reduction in permit amounts to a more moderate amount of withdrawal, with lessened impacts. Prior to full scale production of a well field, well pumping tests run at or near actual production rates can be required. These may give the permittee and the EPD some real idea of the amount of water that may be pumped safely, without endangering other users nor drawing down the aquifer too greatly. Permit withdrawal limits may then be set at some safer yield which is determined by these pumping tests. These tests may also indicate that proposed pumping amounts may require more wells drilled to spread out the ultimate production impact on the aquifer.

References

Evans, J. W. and R. H. England. 1995. A Recommended Method to Protect Instream Flows in Georgia. Georgia Department of Natural Resources, Wildlife Resources Division, Social Circle, GA

NRCS. 1996. Alabama-Coosa-Tallapoosa, Apalachicola-Chattahoochee-Flint Cooperative Study, [Agricultural] Outlook and Water Demand Projections, Appendix A (Revised March 1996). Natural Resources Conservation Service, U.S. Department of Agriculture

Robinson, J.L., C.A. Journey, and J.B. Atkins. 1996. Ground-Water Resources of the Coosa River Basin in Georgia and Alabama—Subarea 6 of the Apalachicola-Chattahoochee-Flint and Alabama-Coosa-Tallapoosa River Basins. Open-File Report 96-177. U.S. Geological Survey, Atlanta, GA

USACE. 1996. ACT/ACF Navigation Potential, Interim Report and Projection Criteria. U.S. Army Corps of Engineers, Institute for Water Resources, Alexandria, VA

Ziewitz, J.W., B.K. Luprek, and G.A. Carmody. 1996. Water Needs of Fish and Wildlife Management Facilities in the Alabama-Coosa-Tallapoosa and Apalachicola-Chattahoochee-Flint River Basins. U.S. Fish and Wildlife Service, Division of Ecological Services, Panama City, FL